

## INSTALLATION - SWIMMING POOLS

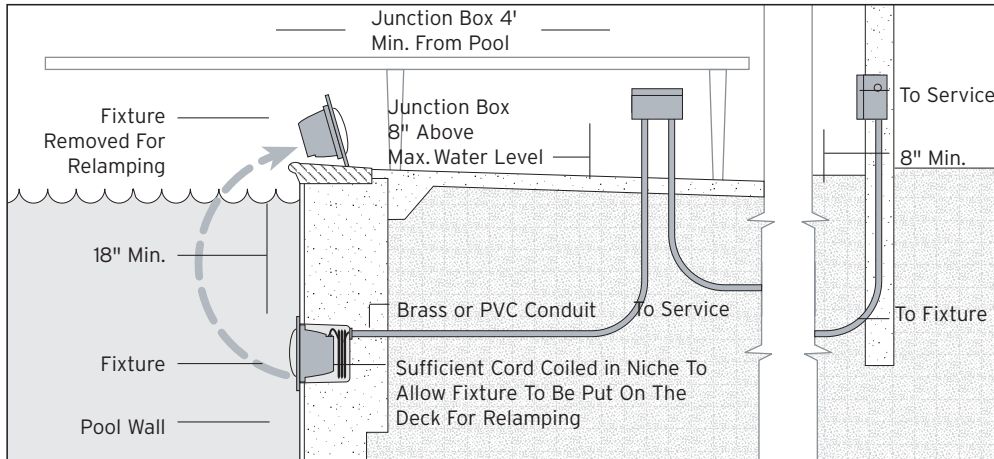
### Wet Niche Fixture & Junction Box Installation

Hydrel fixtures are designed to meet National Electric Code (U.S.A.), Article 680 requirements. The N.E.C. requires that fixtures must be installed so that the top of the fixture is at least 18" below normal water level. The junction box shall be located at least 8" above maximum water level, pool deck, or ground, whichever is greater. The junction box shall be located not

less than 4' from the perimeter of the pool, unless separated from the pool by a fence, wall or other permanent barrier. Junction boxes mounted above grade in the walkway around the pool shall be afforded additional protection by locating them in such places as under a diving board, adjacent to fixed structures, etc. Check local codes to assure compliance.

#### GROUND FAULT CIRCUIT INTERRUPTERS - (GFCI'S)

120 Volt swimming pool and fountain lights are required to be on GFCI circuits. Hydrel recommends a maximum of four lights or 1000 Watts of load per GFCI.



### Recommended Lighting Design

The following information will be useful in determining the lighting requirements for swimming pools.

1. Establish the lamp **wattage and number of fixtures per square feet** required based on the size of the pool and spacing as shown on the chart below.

2. Establish the **approximate fixture wattage** using the following formula:

$$\frac{\text{Pool Area} \times \text{Watts per Sq. Ft}}{\text{Number of Fixtures}} = \text{Watts per Fixture}$$

3. **Select the fixture** that comes closest to meeting wattage requirements

For in-between wattages, use next highest wattage or increase the number of fixtures.

Using low wattage lamps will produce a more even light distribution. Increase lighting requirements when pool walls are other than white.

The recommendations are for standard type pools.

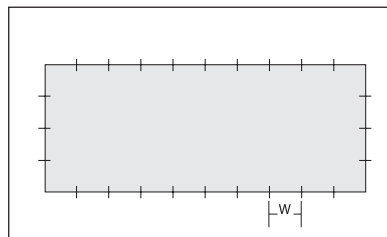
For special applications, consult your Hydrel representative.

OUTDOOR* POOL	LAMP WATTS PER SQ. FT.	"W" = MAX. FEET		"D" = DEPTH BELOW WATER
		POOL DEPTH OVER 5 FT.	POOL DEPTH UNDER 5 FT.	
RESIDENTIAL	0.5 TO 1	--	--	18"
COMMERCIAL	1 TO 1.5	16'	18'	18"
COMPETITION	1.5 TO 2**	14'	16'	18"
DIVING POOL	2 TO 3	14'	--	36"

\* For indoor pools increase lighting by 25% (x 1.25)

\*\* Never center lights in racing lanes

FOR WHITE BOTTOM POOLS LAMP WATTS PER SQ. FT	
12 VOLTS - 75 WATTS	120 VOLTS - 250 WATTS
0.15 WATTS / SQ. FT.	0.25 WATTS / SQ. FT.
0.25 WATTS / SQ. FT.	0.50 WATTS / SQ. FT.
0.50 WATTS / SQ. FT.	0.75 WATTS / SQ. FT.



SWIMMING POOL

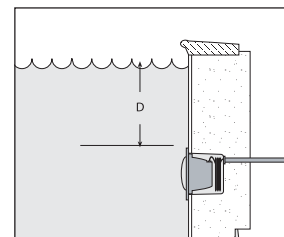


Photo left:

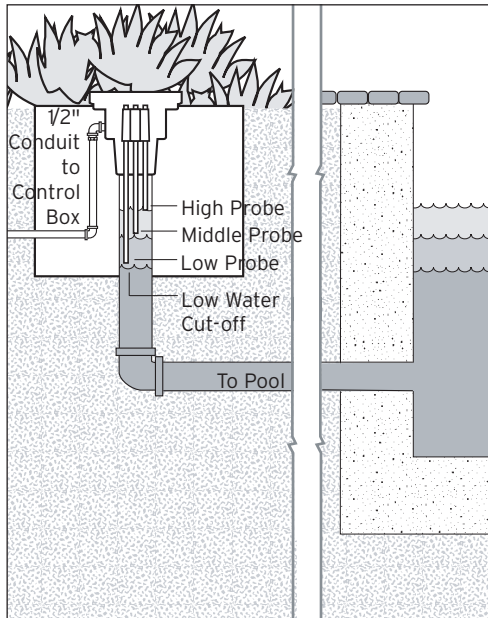
The orchid pool at a renowned Hawaiian hotel is illuminated by 500 Watt underwater lights.

HYDREL

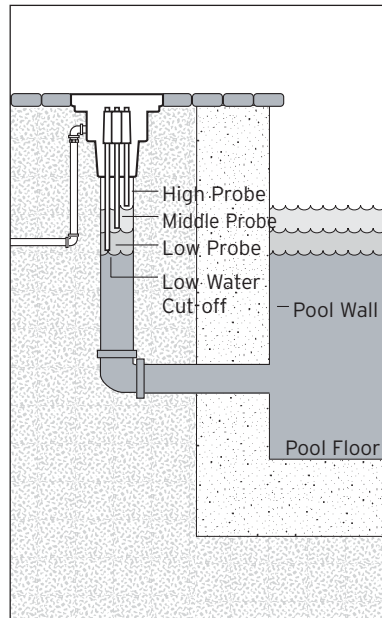
## INSTALLATION - CONTROLS

### ELWC Electronic Level and Low Water Cut-off

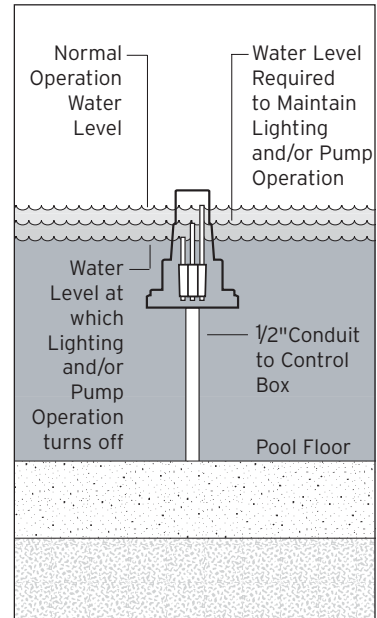
ELWC / Remote Mount



ELWC / Deck Mount



ELWCI / Conduit Mount



The ELWC and the ELWCI maintain water level and also protect pump and lighting equipment against overheating should water level drop below the minimum required for cooling.

The units consist of a control box and sensor housing. The ELWC is designed for deck or remote mounting with the sensor housing set in a down position. The ELWCI is for conduit mounting with the sensor housing set in an up position.

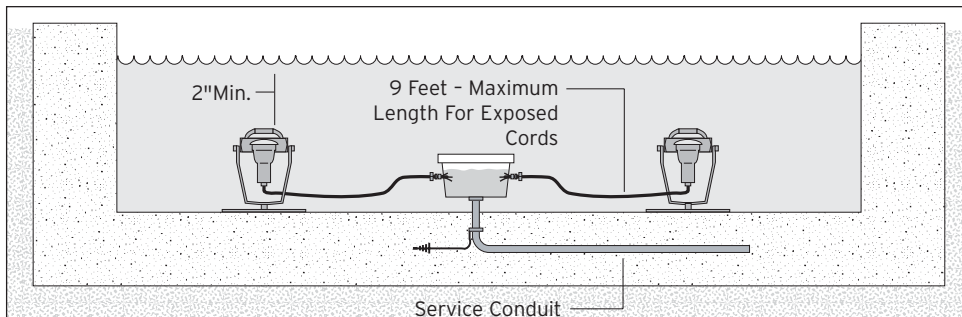
These units are electrically connected to a remotely located control box. The sensor units monitor the pool water level by making the electrically conductive water a part of the control unit. This is accomplished with a series of three stainless steel probes which must be cut to the proper length for the specific pool. The water is maintained between the high and middle probe as the control senses the water position and activates or shuts off the water supply solenoid. The low probe is the cut-off which senses the absence of water and turns off the lighting and pump equipment.



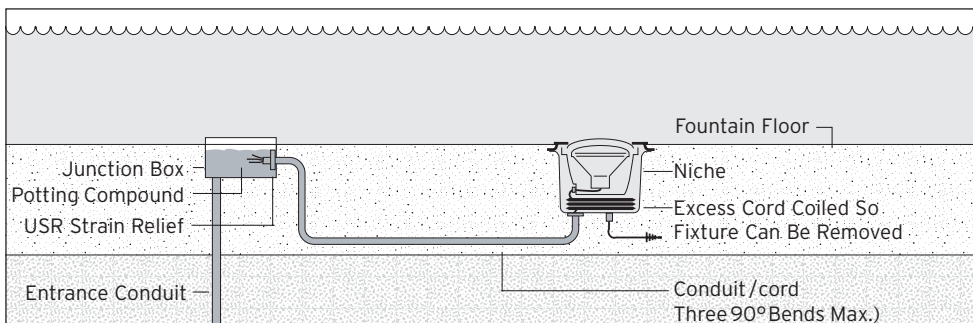
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## INSTALLATION - FOUNTAINS

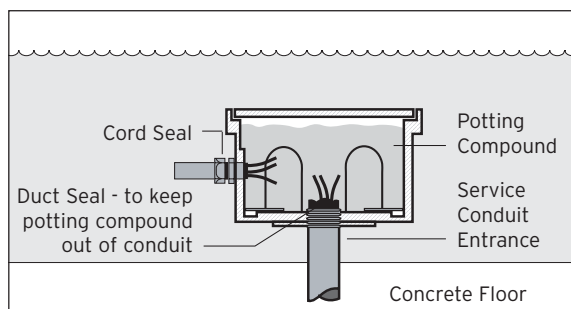
### Junction Box & Fixture Installation / Base or Yoke Mount / Fountains Only



### Junction Box & Fixture Installation / Niche Mount / Fountains Only



### Underwater Junction Box / Installation Detail Base or Yoke Mount Fixtures / Fountains Only

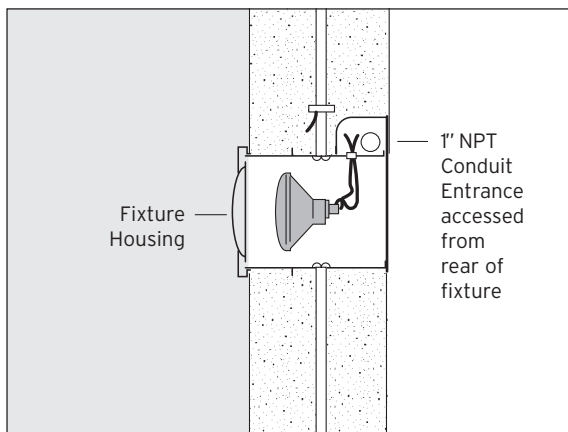


### Junction Box Selection Guide

All conductors are to be considered in calculations.

CONDUCTOR SIZE A.W.G.	REQ. SPACE IN BOX FOR EACH CONDUCTOR
18	15 CU. IN.
16	175 CU. IN.
14	2.0 CU. IN.
12	2.25 CU. IN.
10	2.5 CU. IN.
8	3.0 CU. IN.
6	5.0 CU. IN.

### Dry Niche Installation



### 4800 Series / Concrete Niches

